

**IN THE CLAIMS**

**Claim 1 (Amended):**

1           1. An optical cable, substantially without a central strength member, the  
2     optical cable comprising:  
3           at least one multi-fiber unit tube dimensioned to receive a plurality of  
4     optical fibers, the unit tube being substantially circular and having an inner  
5     diameter (D), wherein the modulus of the at least one multi-fiber unit tube is less  
6     than 70,000 psi;  
7           a stacked plurality of optical fiber ribbons positioned within the multi-fiber  
8     unit tube, the stacked plurality of optical fiber ribbons having a diagonal length  
9     (d),  
10          wherein the ratio of the diagonal length (d) of the stacked plurality of  
11     optical fiber ribbons to the inner diameter (D) of the multi-fiber unit tube is at least  
12     0.90; and  
13          a filling material disposed between the stacked plurality of optical fiber  
14     ribbons and the multi-fiber unit tube.

**Claim 2 (Original):**

1           2. The apparatus as recited in claim 1, wherein the diagonal length (d) of  
2     the stacked plurality of optical fiber ribbons is approximately equal to the inner  
3     diameter (D) of the multi-fiber unit tube.

**Claim 3 (Original):**

1           3. The apparatus as recited in claim 1, wherein the filling material is  
2     selected from the group consisting of at least one yarn and nonwoven tape.

**Claim 4 (Original):**

1           4. The apparatus as recited in claim 1, wherein the filling material  
2     includes water-swellaable super absorbent powder (SAP).

**Claim 5 (Amended):**

1           5. The apparatus as recited in claim 1, wherein at least one of the multi-  
2 fiber unit tubes [has a modulus less than 70,000 psi and] is made from a material  
3 selected from the group consisting of low-density polyethylene (LDPE), linear  
4 low-density polyethylene (LLDPE), ultra-low-density polyethylene, highly  
5 plasticized polyvinylchloride (PVC), extrudable thermoplastic elastomers,  
6 ethylene/vinyl acetate copolymers, ethylene/acrylic acid copolymers and flexible  
7 polyolefin-based elastomers.

**Claim 6 (Original):**

1           6. The apparatus as recited in claim 1, wherein the filling material further  
2 comprises a hydrophobic, thixotropic gel.

**Claim 7 (Original):**

1           7. The apparatus as recited in claim 1, wherein the stacked plurality of  
2 optical fiber ribbons further comprises an array of optical fibers selected from the  
3 group consisting of a 3 x 4 array, a 12 x 12 array, a 6 x 8 array, a 4 x 12 array, a  
4 9 x 8 array, a 6 x 12 array and a 8 x 12 array.

**Claim 8 (Original):**

1           8. The apparatus as recited in claim 1, further comprising at least one  
2 protective jacket formed around the at least one multi-fiber unit tube.

**Claim 9 (Original):**

1           9. The apparatus as recited in claim 8, wherein the protective jacket is  
2 made of a material selected from the group consisting of high-density  
3 polyethylene (HDPE), medium-density polyethylene (MDPE), linear low-density  
4 polyethylene (LLDPE), polyvinylchloride (PVC), polyamides, and low-smoke  
5 zero-halogen filled polyolefins.

**Claim 10 (Original):**

1           10. The apparatus as recited in claim 1, wherein the at least one multi-  
2 fiber unit tube further comprises a plurality of multi-fiber unit tubes stranded  
3 together in a SZ configuration.

**Claim 11 (Amended):**

1           11. An optical cable, substantially without a central strength member, the  
2 optical cable, comprising:  
3           at least one multi-fiber unit tube dimensioned to receive a plurality of  
4 optical fibers therein, the at least one multi-fiber unit tube having a shape and a  
5 modulus less than 70,000 psi;  
6           a plurality of optical fibers positioned within the multi-fiber unit tube;  
7           wherein at least one of the plurality of optical fibers positioned within the  
8 multi-fiber unit tubes further comprises a stacked plurality of optical fiber ribbons;  
9 and  
10          a filling material disposed between the plurality of optical fibers and the  
11 multi-fiber unit tube, wherein the filling material maintains the shape of the multi-  
12 fiber unit tube.

**Claim 12 (Original):**

1           12. The apparatus as recited in claim 11, wherein the filling material is  
2 selected from the group consisting of at least one yarn and nonwoven tape.

**Claim 13 (Original):**

1           13. The apparatus as recited in claim 11, wherein the filling material  
2 includes water-swellaable super absorbent powder (SAP).

**Claim 14 (Original):**

1           14. The apparatus as recited in claim 11, wherein the multi-fiber unit tube  
2 has an inner diameter (D), wherein the stacked plurality of optical fiber ribbons  
3 has a diagonal length (d), and wherein the ratio of the diagonal length of the

4 stacked plurality of optical fiber ribbons (d) to the inner diameter of the multi-fiber  
5 unit tube (D) is at least 0.90.

**Claim 15 (Original):**

1 15. The apparatus as recited in claim 11, wherein the multi-fiber unit tube  
2 has an inner diameter (D), wherein the stacked plurality of optical fiber ribbons  
3 has a diagonal length (d), and wherein the inner diameter of the multi-fiber unit  
4 tube is approximately equal to the diagonal length of the stacked plurality of  
5 optical fiber ribbons.

**Claim 16 (Amended):**

1 16. The apparatus as recited in claim 11, wherein at least one of the  
2 multi-fiber unit tubes [has a modulus less than 70,000 psi and] is made from a  
3 material selected from the group consisting of low-density polyethylene (LDPE),  
4 linear low-density polyethylene (LLDPE), ultra-low-density polyethylene, highly  
5 plasticized polyvinyl chloride (PVC), extrudable thermoplastic elastomers,  
6 ethylene/vinyl acetate copolymers, ethylene/acrylic acid copolymers and flexible  
7 polyolefin-based elastomers.

**Claim 17 (Original):**

1 17. The apparatus as recited in claim 11, wherein the filling material  
2 further comprises a hydrophobic, thixotropic gel.

**Claim 18 (Original):**

1 18. The apparatus as recited in claim 11, wherein the at least one multi-  
2 fiber unit tube further comprises a plurality of multi-fiber unit tubes stranded  
3 together in a SZ configuration.

**Claim 19 (Original):**

1 19. The apparatus as recited in claim 11, further comprising at least one  
2 protective jacket formed around the at least one multi-fiber unit tube.

**Claim 20 (Original):**

1           20. The apparatus as recited in claim 19, wherein the protective jacket is  
2       made of a material selected from the group consisting of high-density  
3       polyethylene (HDPE), medium-density polyethylene (MDPE), linear low-density  
4       polyethylene (LLDPE), polyvinylchloride (PVC), polyamides, and low-smoke  
5       zero-halogen filled polyolefins.

**Claim 21 (Original):**

1           21. The system as recited in claim 19, wherein the optical cable further  
2       comprises at least one strength member formed in the protective jacket.

**Claim 22 (Amended):**

1           22. An optical waveguide system for transmitting optical information,  
2       comprising:  
3           at least one source of optical energy;  
4           an optical cable coupled to the source for transmitting optical energy from  
5       the source; and  
6           a receiver coupled to the optical cable for receiving optical energy from the  
7       source,  
8           wherein the optical cable is configured substantially without a central  
9       strength member, and wherein the optical cable further comprises  
10           at least one multi-fiber unit tube having therein a plurality of optical  
11       fibers, the unit tube being substantially circular and having an inner diameter (D)  
12       and a modulus less than 70,000 psi,  
13           a stacked plurality of optical fiber ribbons having a diagonal length  
14       (d) and positioned within the multi-fiber unit tube,  
15           wherein the ratio of the diagonal length of the stacked plurality of  
16       optical fiber ribbons (d) to the inner diameter of the multi-fiber unit tube (D) is at  
17       least 0.90, and

18                   a filling material disposed between the plurality of optical fibers and  
19 the multi-fiber unit tube.

**Claim 23 (Original):**

1           23. The system as recited in claim 22, wherein the filling material is  
2 selected from the group consisting of at least one yarn and nonwoven tape.

**Claim 24 (Original):**

1           24. The system as recited in claim 22, wherein the filling material is  
2 disposed between the plurality of optical fibers and the multi-fiber unit tube in  
3 such a way that maintains the shape of the multi-fiber unit tube.

**Claim 25 (Amended):**

1           25. The system as recited in claim 22, wherein at least one of the multi-  
2 fiber unit tubes [has a modulus less than 70,000 psi and] is made from a material  
3 selected from the group consisting of low-density polyethylene (LDPE), linear  
4 low-density polyethylene (LLDPE), ultra-low-density polyethylene, highly  
5 plasticized polyvinyl chloride (PVC), extrudable thermoplastic elastomers,  
6 ethylene/vinyl acetate copolymers, ethylene/acrylic acid copolymers and flexible  
7 polyolefin-based elastomers.

**Claim 26 (Original):**

1           26. The system as recited in claim 22, wherein the filling material further  
2 comprises a hydrophobic, thixotropic gel.

**Claim 27 (Original):**

1           27. The system as recited in claim 22, wherein the optical cable further  
2 comprises at least one protective jacket formed around the at least one multi-  
3 fiber unit tube.

**Claim 28 (Original):**

- 1           28. The system as recited in claim 27, wherein the protective jacket is
- 2   made of a material selected from the group consisting of high-density
- 3   polyethylene (HDPE), medium-density polyethylene (MDPE), linear low-density
- 4   polyethylene (LLDPE), polyvinylchloride (PVC), polyamides, and low-smoke
- 5   zero-halogen filled polyolefins.